CEVE 101
Fundamentals of Civil and Environmental Engineering
Fall 2014 Syllabus

Tuesday and Thursday 10:50-12:05
Ryon Lab 201

Professor: Dr. Philip B. Bedient
Email: bedient@rice.edu
Office: ML 113, Ext. 4953
Office Hours: Tuesday and Thursday 1:30-3:00pm or by appointment

TA: Kasia Nikiel
Email: can5@rice.edu

Required Textbook and selected readings:

Fundemetals of Civil and Environmental Engineering: CEVE 101 Rice University custom edition

The air Around Us: select chapters, Richard A. Anthes 7th Ed. Prentice Hall Publishing Inc., 1997

Hydrology and Floodplain Analysis: Chapters 1 and2, Phillip B. Bedient, Wayne C. Huber, Baxter E. Vieux, 5th Ed. Prentice Hall Publishing Co., 2012

CEVE 101 is a required course for entering CEVE students, in both B.S. and B.A. degree programs. Students will learn about engineering fundamentals, infrastructure, computational methods, major engineering projects, and presentation/writing skills. Each area of concentration of the CEVE curriculum will be covered, and students will be introduced to selected faculty and outside experts. Hydrologic engineering, water resources and fluid mechanics will be covered first. Environmental engineering, Environmental law, and associated water quality, and pollution control will be covered second. Then Structural engineering and design, infrastructure, and risk will be covered third. Finally soil mechanics and engineering economics will be covered last. There are 8 HW assignments, exams and group presentation.

Week	Date	Topic	Lecturer	Hw	Reading
1	8/26	Intro to Civil and Environmental Engineering	Bedient		Ch 1 Davis
	8/28	Meteorology and Climatology	Bedient		HO
2	9/2	Hydrology	Bedient	HW 1 due	Ch 1 PBB Ch 7 Davis
	9/4	GW Hydrology/ Sustainability	Bedient		CH 2 PBB Ch 7 Davis
3	9/9	Materials Balance	Bedient	HW 2 due	Ch 8 Davis
	9/11	Sustainable Design	Bedient		Ch 8 Davis Quiz on Hydro
4	9/16	Water Pollution/Water Chemistry	Janet G.	HW 3 due	HO
	9/18	Water Res and Green Infrastructure	Guest		HO
5	9/23	Water Quality Management	Bedient	HW 4 due	Ch 9 Davis
	9/25	In Class Exam	Bedient		
6	9/30	Water Quality Case Studies	Bedient		CH 9 Davis
	10/2	Environmental Law	Dunbar		Ch 14 Davis
7	10/7	Policy and Eco-regions of Houston-Galveston area	Blackburn	HW 5 due	
	10/9	Haz Waste Overview	Bedient		Ch 14 Davis
8	10/14	No Class Fall Recess			
	10/16	Case Studies	Guest		Haz waste cases
9	10/21	Energy Balance	Cohan	HW 6 due	

	10/23	Climate Change	Cohan		
10	10/28	Soils	Cibor	HW 7 due	Quiz 2 Ecology and Environment
	10/30	Introduction to Structural Engineering	Cibor		
11	11/4	Stress/Strain	Guest	HW 8 due	
	11/6	Structural	Padgett		
12	11/11	Structural	Padgett		Give out Exam 2
	11/13	Structural + Hydrology case study	Padgett/Bedient		
13	11/18	Introduction to Infrastructure Engineering	Duenas-Osorio		Exam 2 Due
	11/20	Infrastructure Engineering	Duenas-Osorio		
14	11/25	Eng Econ	Segner		
	11/27	No Class Thanksgiving			
15	12/2	Engineering Econ	Segner		
	12/4	Final Review	Bedient		

Grades will be designated as follows

3 Tests each worth 20%
Homework/Quizzes 25%
Final Presentation 15%

Homework

***** SOME PROBLEMS MAY HAVE ANSWERS GIVEN THEY MUST STILL BE WORKED FOR CREDIT*****

Homework may change as the course progresses

Homework 1: Write two pages discussing an interesting topic from the first five chapters of *The Air Around Us*

Homework 2: Problems out of *Hydrology and flood plain analysis,* 1.6, 1.9, 1.12, 1.21, 1.29

Homework 3: Problems out of *Fundamentals of Civil and Environmental Engineering,* 1-1, 1-8, 7-4, 7-8, 7-10

Homework 4: Problems out of *Fundamentals of Civil and Environmental Engineering,* 4-5 (problem), 4-9, 4-16, 4-40, 9-1, 9-11

Homework 5: Problems out of *Fundamentals of Civil and Environmental Engineering,* 9-28, 9-39, 5-12, 5-16

Homework 6: Problems out of *Fundamentals of Civil and Environmental Engineering,* 14-3(discussion), 14-6, 14-9, 14-14, 14-32

Homework 7: Problems out of *Fundamentals of Civil and Environmental Engineering,* 8-2, 8-4(problem and discussion), 8-6, 8-7, 8-8, 8-17

Homework 8: Problems out of *Fundamentals of Civil and Environmental Engineering,* 6-2, 6-4, 6-6, 6-9

Three Semester Exams

Exam	Type	Date
Exam 1	In class	Thursday, Sept. 25
Exam 2	Take Home	Due Thursday, Nov. 18
Exam 3	Take Home	Due last day finals Dec 17, 2014

End of Semester Project:

The semester project allows you and your group to delve into a specific engineering topic--ranging anywhere from Hurricane Katrina to the Wind Turbines to earthquakes. Students' communication and group work skills will be discussed in class and further sharpened through faculty advice and peer feedback. Presentations will be given throughout the semester as the class shifts into a different concentration of Civil and Environmental Engineering. Groups will be established based on area of preference. Topics will be chosen by each group based on the list below, once groups have been established. If for any reason the group is not satisfied with the pairing or is not happy with the list provided below, you may be able to change members and/or project only with prior approval of Dr.Bedient who will either say yes or no to the new suggested topic.

Suggested topics for Group projects

	Area I&II	Area III&IV
1	Low Impact Development	Houston Public transportation: feasibility and possibilities
2	Groundwater bioremediation	Houston Bridge Vulnerability
3	FAS3 Flood Alert system & Other systems	Houston Ship Channel
4	Edwards Aquifer: Looking into future needs of San Antonio	Hurricane Evacuations on the Gulf Coast
5	Protecting the Texas Gulf Coast from extreme events	Earthquake dampening technologies
6	Alternative Fuel Vehicles	Jefferson Salt Mine Collapase
7	Houston Air Quality	Levees: Are they worth it?
8	Oil Spill Remediation	Sink Holes
9	Water Quality in Houston	LA Metro Collapse
10	Dam Decommissioning	Bridge Scouring
11	Nuclear Waste	Assessing damage of Natural Disasters
12	Tidal and Wave Energy on the Gulf Coast	Role of uncertainty in structural engineering
13	The end of the superfund?	Engineering Ethics
14	Hurricane Katrina - aftermath	Managing Risk in Civil Engineering
15	Groundwater surface water interaction	